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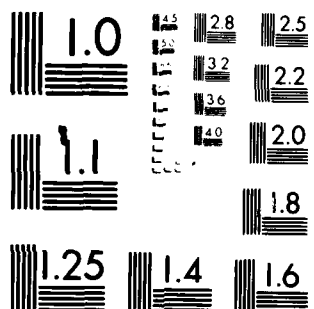
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**ANALYSIS, RECOMMENDATIONS, PLAN OF ACTION
AND MILESTONES
PART I
TACTICAL ELECTROMAGNETIC PROGRAMS OFFICES**

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**DEPARTMENT OF THE NAVY
NAVAL MATERIAL COMMAND
TACTICAL ELECTROMAGNETIC SYSTEMS STUDY
ACTION COUNCIL**

1 MARCH 1976

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TACTICAL ELECTROMAGNETIC SYSTEMS STUDY (TESS)
ACTION COUNCIL

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ANALYSIS, RECOMMENDATIONS,
PLAN OF ACTION AND MILESTONES.

PART I •
TACTICAL ELECTROMAGNETIC PROGRAMS OFFICES.

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1. Executive Summary

➤ This volume of the TESS Action Council Report provides background, analysis, recommendations and a plan of action and milestones for the Navy's tactical electromagnetic effort. It relates the numerous problems identified in the Tactical Electromagnetic Systems Study (TESS), in 1973, to the on-going, limited Tactical Electromagnetic effort, specifically TEMP. Organization, management and procedures are addressed toward appreciably improving Navy electromagnetic capabilities without altering existing SYSCOM line management authority.

The conclusions of the Council are: ↙

- The preponderance of Fleet tactical electromagnetic problems which prompted the 1970 TESS Study still exist.
- Emphasis given to tactical electromagnetic considerations in the development and acquisition of new systems and equipment is unsatisfactory.
- Known tactical electromagnetic deficiencies in systems and equipment currently in use are not being aggressively corrected.
- Directives and documentation currently in effect are being ignored and circumvented in practice.
- Existing organizations and procedures for management and coordination of tactical electromagnetic efforts have been manipulated by line managers so that their overall effectiveness is minimal and in the case of interfacing systems, equipment and platforms, practically non-existent.

The Director, TEMP, (ELEX-095) is essentially impotent to discharge his chartered responsibilities. TEMP is regarded as a corporate entity of NAVELEX rather than as an Executive Agent of the CNM. Having been frustrated in its coordinative and directive activities, it has turned to the management of specific programs. Section 5 of this volume sets forth these and other conclusions.

The recommendations of the Council are:

- Upgrade DCONM for Reliability and Maintainability to DCONM, Systems Effectiveness.
- Delete the acronym TEMP, and rename Tactical Electromagnetic Coordination and Standards (TECS). *
- Establish Director, TECS, as a Division Director on the CNM staff, under the DCONM, Systems Effectiveness, utilizing existing TEMP billets.
- Establish TECS Offices in NAVAIR, NAVSEA, and NAVELEX, with TECS focal points in the other SYSCOMs and CNM Designated Project Management Offices. Billets exist except in NAVAIR.
- Issue strong charters clearly delineating responsibilities, and dictating interfacing actions among SYSCOMs.

* Throughout this report, the term TEMP is used to identify the existing tactical electromagnetic effort and organization. In consonance with the Council's recommendations, the recommended organization is identified throughout the text as TECS.

2. PROGRAM DESCRIPTION

The Naval Material Command tactical electromagnetic effort is defined in the Charter for the Director, TEMP (Enclosure (1) to NAVELEXINST 5430.19 of 18 April 1974). The stated purpose of the program is to provide the Navy with balanced, compatible, effective and countermeasures resistant electromagnetic equipment. Tactical electromagnetic systems/equipment are defined as those electronic systems/equipment essential to the offensive or defensive capability of a task force. These systems are developed, procured and supported by the Naval Systems Commands and CNM Designated Project Management Offices.

As presently established, the Director, Tactical Electromagnetic Programs (TEMP) and his office are charged with exercising for the CNM centralized program management, assessment and planning of the NMC TEMP program. The Commander NAVELEX is assigned lead SYSCOM status for the programs and the Director, TEMP, is organizationally within NAVELEX, being designated ELEX-095.

3. BACKGROUND

3.1. History

3.1.1. Tactical Electromagnetic Efforts in OPNAV

It was apparent some years ago that management of the electromagnetic environment of naval task forces was needed. In 1969, at the direction of the CNO, a group of senior officers studied the Navy's electromagnetic involvement. Among their recommendations was the recognition of need for increased centralization of management and decision making in the tactical electromagnetic effort. Accordingly, the Office of Tactical Electromagnetic Coordinator (OP-03E) was established under the DCNO Fleet Operations and Readiness, by OPNAV Notice 5430 of 24 November 1969. This office was subsequently upgraded and retitled to that of Director, Tactical Electromagnetic Programs (OP-093), by OPNAV Notice 5430 of 4 January 1971. The systems, equipments and programs under the direction and approval authority of the Director, Tactical Electromagnetic Programs were designated by OPNAV Instruction 5430.46 of 8 June 1972.

A realignment of responsibilities within OPNAV caused the elimination of OP-093 as a separate major staff office and the transfer of its resources and functions to OP-095, under Director, Antisubmarine Warfare and Tactical Electromagnetic Programs, and a Tactical Electromagnetic Programs Division (OP-954) was established. More recently, by OPNAV Notice 5430 of 30 May 1974, the OP-094 mission, functions and resources were transferred to the DCNO (Surface Warfare). Tactical electromagnetic programs at the OPNAV level are now under the aegis of the

of the TEMP Section Head (OP-350C) in the Surface Weapons Systems Division (OP-35). By April 1975 TEMP, per se, had disappeared from the OP-35 organization, leaving no identifiable sponsor in OPNAV.

3.1.2. Tactical Electromagnetic Efforts in the Naval Material Command

OPNAV Notice 5430 of 23 January 1971, which established the major OPNAV staff office, OP-93, also directed the Chief of Naval Material Command to establish a counterpart organization. In compliance, the CNM designated the Manager, REWSON Systems Project (PM-7) to be the Director, TEMP, (PM-7T) within the NMC, in addition to his primary responsibility. NAVMATINST 5430.46 of 21 June 1971 enunciated this assignment, promulgated the Charter for the TEMP Office, and assigned administrative support of the TEMP Office to Commander, Naval Air Systems Command.

The responsibility for executive management of TEMP was reassigned, to the Commander, Naval Electronic Systems Command, effective 25 May 1973, by NAVMATNOTE 5430 of 21 May 1973. This reassignment of responsibilities was amplified by NAVMATNOTE 5430 of 19 June 1973, and directed COMNAVELEX to develop an appropriate charter and Tactical Electromagnetic Programs Master List. Accordingly, COMNAVELEX established a TEMP Office in NAVELEX, as promulgated in NAVELEXINST 5430.16 of 18 July 1973. The NAVELEX TEMP Office was tasked by this instruction with the development of a Concept of Operations. This concept was developed and subsequently incorporated into the Charter for the TEMP Office (ELEX 095), which was issued as Enclosure (1)

to COMNAVELEXINST 5430.19 of 18 April 1974. The Charter delineates the mission, functions, authority and responsibilities of the Director, TEMP. General administrative support of the TEMP Office is provided by COMNAVELEX.

3.2. Concepts and Policy

3.2.1. CNO Problem Recognition

The 1969 senior officer study group, in arriving at its recommendations, concluded that "The current functional management approach to the definition, design and use of electromagnetic equipment hampers the system integration of the equipment." The study group recommended a policy shift away from emphasis on functional systems by OPNAV toward more centralized management and decision making, thus improving the capability for developing integrated systems requirements. A parallel effort was proposed for the Naval Material Command.

The situation which existed was succinctly summarized in the directive (OPNAVNOTE 5430 of 24 November 1969) which established OP-03E. It stated as follows:

One of the Navy's most urgent problems is the management of the electromagnetic environment of naval task forces. Electromagnetic equipment is essential to every mode of naval warfare. In many instances ship and aircraft systems using electronic devices have been developed with inadequate regard for compatibility with the total electromagnetic environment. Electronic planning has in many cases been in the nature of a reaction to meet specific, independent needs. The urgency of

immediate problems has in many cases dictated actions without regard to the more involved consideration of systems integration. This frequently has encouraged random proliferation of electronic programs and has created a multitude of budget items in all appropriation categories. As a result, optimization of the electromagnetic environments for both offense and defense has not been achieved.

The CNO policy for management of the electromagnetic programs was clearly enunciated in the directive (OPNAVNOTE 5430 of 24 January 1971) which established the OPNAV major staff office (OP-093) for tactical electromagnetic programs. It stated:

Policy. In accomplishing this objective, it is the policy of the Chief of Naval Operations to exercise centralized directive authority over all the Navy's tactical electromagnetic programs to the extent necessary to assure systems integration and balance, operational capability and responsiveness to operational needs.

The most recent enunciation of Navy policy as to incorporation of electromagnetic considerations into systems acquisition is set forth in a CNO letter, serial 987P6/69884 of 25 November 1975, addressed to the Chief of Naval Material, Chief of Naval Development and Chief of Naval Research. The policy is stated as follows:

Policy: In the development and improvement of Naval ships, aircraft, C³ elements, and other components/subsystems/systems, consideration of total system mission survivability/operability in the electromagnetic environment is mandatory. This environment, including EMI, EMP (nuclear or otherwise), and high energy/low energy LASER radiations, may be created by both friendly and hostile sources, and induced either intentionally e.g., electronic warfare, or unintentionally. This consideration shall extend from conceptual formulation through design development, test, evaluation, acquisition, and installation.

3.2.2. CNM TEMP Office Mission

Subsequent to the establishment of the NAVMAT TEMP Office (PM-07T), there was considerable dialogue, both discussions and correspondence, within the Material Command, as to the need for greater centralization of management of Tactical Electromagnetic Programs efforts in consonance with the recommendations of the 1969 OPNAV study group. The trend was towards centralization. However, the present concept of operation which evolved was not firmly defined or established until early 1974. It was April 1974 when the currently effective Charter for the TEMP Office (ELEX-095) was promulgated by COMNAVELEX, with CNM approval. Included in the Charter is the Mission Statement for ELEX-095 which reads as follows:

To exercise for the CNM centralized program management, assessment and planning for the NMC TEMP program in support of CNO requirements and policies in order to provide the Navy with balanced, compatible, effective and countermeasures resistant electromagnetic equipment. This mission encompasses electromagnetic compatibility (EMC), countermeasure, counter-countermeasure vulnerability assessment, electromagnetic vulnerability (EMV) including nuclear pulsed and high energy effects, the study and understanding of the electromagnetic environment, the reduction of unintentional radiation and the control of emissions (EMCON) and the reduction of radiation hazards (RADHAZ, HERO).

3.3. Underlying Causes

Throughout the Tactical Electromagnetic Systems Study (TESS), there is a recurrent and insistent theme for improved, coordinated management of tactical electromagnetic programs. Of the eleven volumes comprising the report, one complete volume,

Volume XI (Systems Concepts) is devoted in its entirety to planning and management. Its major thesis is that planning has been oriented too much to equipment and too little to integrated systems. The mission statement of the TEMP Office, set forth above, is a clear enunciation of the intention to cause electromagnetic systems to be developed as truly integrated systems, balanced, effective and compatible. Under this and previous defining charters, defining productive (line) program management, the TEMP Office has been unable to eliminate problems as set forth in the TESS Report, and its effectiveness in accomplishing its mission has been limited. In perhaps oversimplified terms, the goals of the TEMP Office are to eliminate existing problems and to prevent problems from occurring in the future, in its assigned area of endeavor.

4. GOALS AND OBJECTIVES

4.1. Action Council Goals

The TESS Action Council was specifically tasked to "consider the requirement for improved electronic equipment management of concept, proliferation, integration, interaction, standards, reliability, functional utility and cost. From these considerations, formalize recommendations for changes to the Navy Material Command Organizations Manual, NAVMATINST 5460.2, which will optimize the Navy electromagnetic capabilities." The comprehensiveness of the parameters set forth in the foregoing, in particular, the phrase "improved overall electronic equipment management..." dictates that the entire spectrum of policy and management of tactical electromagnetic programs be examined and assessed, and where indicated, recommendations for improvement be made.

4.2. Analytical Procedure

Procedurally, the initial action of the Council was to obtain and assemble documentation pertaining to electromagnetic programs in general and to the TEMP organization specifically. This documentation consisted of directives, organization manuals and charts, charters of TEMP Offices, pertinent military specifications and standards, program plans, action sheets and responses and miscellaneous correspondence. The incumbents in the NAVMAT TEMP Office (ELEX 095), and TEMP focal points in NAVAIR and NAVSEA, provided documents, comments, statements of problems and recommendations for improvement, without reservation.

A review has also been conducted to determine the status of 78 problems/recommendations (P/Rs) in the TESS relating directly to areas within the purview of TEMP⁽¹⁾. Approximately half of these P/Rs deal with general items (e.g., "radars should be built with better front end filtering") while the other half refer to specific cases (e.g., "install burnout resistant mixer diodes in the missile receiver"). To determine the status of these P/Rs "Request for Information" packets were distributed to various activities believed to have knowledge of ongoing efforts in the respective problem areas. Responses were received relative to 32 of the 78 P/Rs. However, a number of these responses provided virtually no useful information, thus the effective response rate to date is less than indicated. Responses are, at this writing, being prepared for remaining P/R's. When received, the Council intends to pass them to Director, TEMP, for action as he deems appropriate.

The status of specific TESS problem areas is treated separately in the TESS Assessment Report. In this section of the report, only the broad spectrum of the problems as they relate to TEMP effectiveness is examined.

4.3. Evaluation

Several alternative approaches were considered as paths to evaluate the effectiveness of the TEMP organization. The first was the use of the TEMP Charter and Master list as the base line; a second

⁽¹⁾These areas include EMC, EMV, EMP, ECM, ECCM, HERO, and RADHAZ

would have related primarily to the TEMP Master Plan. A third, more basic approach that was examined was equating TEMP effectiveness relative to the mission statement of the TEMP Office. All approaches would have, in turn, related the basic documentation to the existing organization, management, and procedures, and to the problems previously identified.

The first two possibilities--of using the Charter or Master Plan, would be appropriate in that both are detailed and very specific. These documents include all aspects of the operation, but they have a common weakness as criteria, since both were developed by the TEMP Office. The question to be answered is not whether TEMP has performed within the context of directives, but, rather, whether it has contributed to the solution of those problems for which it was formed.

It was decided, therefore, to relate the present organization and procedures directly to the problems which resulted in the initiation of the TEMP effort. Although, in practice, this includes a very large number of specific problems of varying severity, conceptually it consists of only two fundamental problems. These are:

(1) Introduction into the Fleet of systems which either fail to function properly because of the existing operational electromagnetic environment (friendly and/or hostile) or which alter that environment in such a way so as to degrade the operation of other existing systems.

(2) Failure within the existing Navy organizational structure to provide reliable, effective procedures for preventing recurrence of

problems or an efficient means of dealing with problems in existence.

Based on consideration of these factors, the basis used for evaluating was determination of whether TEMP has significantly impacted positively on the Navy's tactical electromagnetic programs, and further determination of whether any short-falls were in the organization itself, or in not employing a basically sound organization.

5. ANALYSIS

5.1. Discussion

One of the questions in the Request for Information called for identification of persisting problems. A recurrent theme in the replies from the SYSCOMs and field activities was that of a need for improved management and coordination of systems and equipment acquisition toward specifically addressing elimination of tactical electromagnetic problems. The analysis of individual problems and their recommended solutions are treated in the TESS Assessment Report. Analysis in this section is, accordingly, based upon summarizations and compilations of responses, and on direct contributions of SYSCOM Council participants. The conclusions set forth in this section have been arrived at on this basis.

5.2. TEMP Office (ELEX 095) ROLE

The statement of the mission of the Director, TEMP in this Charter requires him:

To exercise for the CNM centralized program management, assessment, and planning of the NMC TEMP program in support of CNO requirements and policies in order to provide the Navy with balanced, compatible, effective and countermeasures resistant electromagnetic equipment....

The TEMP Charter assigns the Commander, NAVELEX, responsibility as Lead SYSCOM for the TEMP program, and provides the Director, TEMP, with considerable authority and responsibility.

It is the assessment of the Council that if the Director, TEMP, were able to exercise his authority

← and carry out his responsibilities, the conclusions drawn in this section would not be valid. However, the decentralized modus operandi of the NMC, and the zealously guarded perquisites of the several SYSCOMs have seriously hampered the efforts of the TEMP Office to function effectively.

More specifically, the following situation exists:

- (1) The TEMP Office has not fulfilled its coordination/integration role.
- (2) The TEMP Office is not generally viewed as the overall Navy focal point for solving EMC/EMV/HERO and related problems.
- (3) Efforts of the TEMP Office have not been supported in programming and budgeting to effectively pursue its concepts and projected plans of action.
- (4) The TEMP Office has been placed in the position of directly managing developmental programs in attempting to accomplish its mission.

5.3. Contributing Factors

5.3.1. Assessment

Assessment of the stated (mission) role of the existing TEMP Office, ELEX 095, versus its real-life participating role in EM problem solving led the Council to the identification of several causative factors to which short-falls in effectiveness can be attributed.

These are set forth below:

(1) The TEMP Office (ELEX 095) is identified as a staff entity of NAVELEX, rather than as an agent or spokesman for the CNM. This attitude prevails as a result of the absence of any formal identification, other than in the TEMP Charter, with the CNM or with the Staff, CNM. COMNAVELEX serves as lead SYSCOM for tactical electromagnetic efforts, and this position solidifies the identification of the TEMP Office unilaterally as a NAVELEX staff entity.

(2) The major responsibilities assigned by Charter to the Director, TEMP (ELEX 095) are not supported, nor are their discharge facilitated by adequate programming priorities, either by NAVELEX, CNM, or other SYSCOMs. This lack of real-life emphasis on tactical electromagnetic efforts appreciably limits the efforts of the TEMP Office to pursue any effective programs toward the reduction of Fleet EM problems and deficiencies.

(3) The apparent attitude of the SYSCOMs toward tactical electromagnetic efforts is one from the levels of participation.

(4) The existing TEMP Office (ELEX 095) has concentrated its efforts on the direct management of various specific programs, rather than on its primary responsibilities of coordination and integration. This is perhaps a secondary cause, in that this is a fall-back position itself resulting from the lack of support for performing the primary mission.

5.3.2. The TEMP Master List

The TEMP Master List, which categorizes degrees of

responsibilities in terms of the degree of financial control, has tended to be translated by principal development authorities (PDAs) into level of cooperation provided the TEMP Office. This, in turn, has resulted in Director, TEMP, attempting to gain a greater financial control in order to obtain a greater voice in program direction.

5.4. Conclusions

The Council's conclusions in broad scope are as follows:

- (1) The preponderance of problems identified in the TESS Report, issued in February 1973, are still unresolved.
- (2) Adequate emphasis is not given to consideration of tactical electromagnetic implications in acquisition of systems and equipment.
- (3) Tactical electromagnetic deficiencies exist in systems and equipment currently in use.
- (4) The efforts to prevent and correct tactical electromagnetic deficiencies, although reasonably well-defined in directives, are not supported in actual practice.
- (5) Existing organizations and procedures for management and coordination of tactical electromagnetic efforts are not aligned so as to be mutually supporting toward the furtherance of electromagnetic efforts in interfacing systems, equipments and platforms.

5.5. Management Concepts

5.5.1. The Naval Material Command Existing Concept

Within the existing structure and management concept

of the Naval Material Command, primary responsibility for development of equipment, systems and platforms lies with the SYSCOMs and CNM designated Project Management Offices. The role of the CNM and his staff is essentially one of providing guidance and coordination. Each SYSCOM has certain authority and responsibility, under law, in the accomplishment of its planning, development, acquisition and support functions.

Matters which interface among or between systems, equipments and platforms, and which may impact on their effectiveness, reliability or survivability are monitored and coordinated through a staff directive approach. This is in contrast to the productive (line) approach within each SYSCOM used in developing and producing its hardware and platforms.

The tactical electromagnetic effort is thus addressed as a directive management rather than a line management effort, since it cuts across systems, equipment and platform lines, as they interface.

5.5.2. The Alternative Line Management Concept

There is an idealized approach to management, which could accommodate impacting inter-system equipment/platform lines in the area of electronics equipment acquisition in the NMC. This would be to assign responsibility for management of all electronics acquisition to a single SYSCOM. Such an action would permit a uniform application of standards, procurement policy, proliferation constraints and related matters across the various weapons systems and platforms. This approach, however, would be an appreciable departure from the existing structures and procedures within NAVMAT. It would, in fact, require

a major redefinition and realignment of SYSCOM roles.

5.5.3. The Council Approach

The TESS Action Council considered application of the productive (line) management approach to the improvement of tactical electromagnetic systems. Although, in the long range, this might be a desirable course of action, it is considered inappropriate to recommend it. It would require, as stated above, a major reorganization within and among the SYSCOMs, and is clearly beyond the purview of this Council. At this time it is viewed as not being a viable management approach. Based on the conclusions drawn, the Council believes that the comparable improvements in tactical electromagnetic management can be achieved through less sweeping realignments of organization and management. Centralized management is a "de facto" approach within each SYSCOM, and hence it is the effective inter-SYSCOM interfaces which need to be developed for tactical electromagnetic systems. This is the approach used by the Council in developing the options and recommended courses of action set forth in the following section.

6. RECOMMENDATIONS

6.1. Discussion

The approach to management of the NMC tactical electromagnetic effort, derived in the preceding section, led the Council to reject as not feasible the concept of direct (line) management of the effort. Application of this concept through either the single SYSCOM approach or through the TEMP Office approach would require sweeping realignment of SYSCOM and CNM designated Project Manager responsibilities and authority.

Accordingly, the direction of the Council has been toward development of management, organization and procedural recommendations employing the concept of directive (staff) management. This approach has been further refined to provide a Plan of Action and Milestones which is feasible, constructive, and requires no change in current SYSCOM line authority or responsibility.

Preferred courses of action are recommended; in most areas alternatives are provided. It is believed that implementation of the recommendations in revising the management concept and structure, the charter, and directive responsibility will provide an effective, acceptable and feasible vehicle for improved management of tactical electromagnetic efforts.

6.2. Management Structure

6.2.1. The Director, TEMP

6.2.1.1. Discussion

The currently effective Charter of the TEMP Office (NAVELEX 095) places the Director and the Office in a position of inverse authority. The Mission Statement of this Charter states that

the Director, TEMP shall "exercise for the CNM centralized program management, assessment and planning of the NMC TEMP program..." The Purpose statement of the promulgating Instruction states, in part "to establish the TEMP Office under the direction of the Commander, Electronic Systems Command", with paragraph 5 of the Charter assigning the Commander, NAVELEX, Lead SYSCOM status for the TEMP Program. The result is that the TEMP Office is viewed as an instrument of NAVELEX. The influence exerted by the Director TEMP is diluted accordingly, in his efforts to coordinate, establish interfaces and effectively monitor programs in other SYSCOMs and within CNM staff.

6.2.1.2. Recommendation

Provide the Tactical Electromagnetic Program Office clear identification as the executive agent of CNM, by position within CNM staff, while still maintaining administrative support in NAVELEX. Optimally, a Deputy CNM for Systems Effectiveness (MAT-06) is envisioned encompassing material readiness in a broad sense. This organizational entity would provide a focal point for identifying and eliminating fleet material effectiveness problems; for integration and coordination of tactical electromagnetic efforts among systems, equipment and platforms; and in reliability and maintainability. The systems effectiveness responsibilities would be aimed toward improving the component parameters of performance, availability and survivability of systems. The orientation would be toward mission rather than toward hardware. ✓

The Director, TECS, will coordinate the tactical electromagnetic effort in the Naval Material Command by:

- Initiation of directives implementing policy
- Establishment of criteria for design standards
- Monitoring of test procedures and results for conformance to standards
- Review of operational reports for equipment, system and platform electromagnetic performance evaluation
- Monitoring and recommending changes in organization, specifications, test and evaluation and engineering documentation, when deemed appropriate
- Assisting in development of R&D plans which concern EM technology
- Coordinating projects for analysis, monitoring and measuring of tactical fleet EM performance
- Ensuring consideration of CM vulnerability and CCM improvements in design, development, construction, acquisition and modification of systems, equipment and platforms.
- Monitoring programming and budgetary submissions for tactical electromagnetic matters, for adequacy and appropriateness.

Under the proposed realignment, there would be two Divisions in MAT 06. One would be the TECS Division (MAT 061) and the other would be the Reliability and Maintainability Division (MAT 062).

The specific organization and staffing is addressed in Section 6.4. Billet requirements, as will be seen, are minimal. This recommendation is reflected in Enclosure (2), Proposed Implementation Documentation.

6.2.1.3. Alternatives

(1) Identify the tactical electromagnetic effort clearly as a CNM staff function. However this does not provide for the problem identifying and solving capabilities of a Deputy CNM for Systems Effectiveness. The option is to place the Director, TECS, in a staff capacity where he would be designated MAT 095 or MAT 09T. While it would provide the tactical electromagnetic coordinative and integrative effort with visibility, it would tend toward fragmentation of efforts in overall effectiveness, and full realization of effective management might not be as readily achieved. The strong desirability for the systems effectiveness features in the previous, recommended action, are believed to be an overriding argument for its establishment.

(2) Identify the Director, TECS, as a CNM Designated Project Manager. This would provide the tactical electromagnetic effort with considerable visibility and a clear identification, but would be inappropriate for a number of reasons. A CNM Designated Project Management Office should be established only in furtherance of a specified project; should have a finite foreseeable life span; and have a purely functional responsibility within the concept of SECNAVINST 5000.1. The Director, TECS, as a PM does not meet any of these criteria. The tactical electromagnetic effort crosses equipment and platform lines, requires extensive inter-SYSCOM coordination,

has no single product identification, and can be expected to be a continuing effort. Accordingly, this alternative is not recommended.

6.2.2. System Command and CNM Designated Project Management Office Participation

6.2.2.1 Discussion

Under the existing TEMP Charter, SYSCOMs and CNM Designated Project Managers are charged with participation in the Tactical Electromagnetic effort to the extent of cooperation with, requesting support of, and providing information to the Director, TEMP, and coordination with other SYSCOMs when efforts interface. The Charter further addresses a satisfactory working relationship between the Director, TEMP and SYSCOM/CNM Designated Project Management Office "Focal Points" as being crucial to success of the tactical electromagnetic policies and procedures. These tenets have been interpreted apparently at will by the intended participants. On one end of the spectrum, NAVAIR has a comprehensive Charter for its TEMP effort (NAVAIRINST 5400.79 of 24 July 1975), and on the other end of the spectrum NAVSEA's effort is covered only by a short paragraph in that SYSCOM's Organization Manual; with no Focal Points clearly identifiable in NAVFAC, NAVSUP, or any CNM Designated Project Management Office. The NAVELEX effort is accommodated within the Office of the Director, TEMP, and this arrangement is formalized in the Organization Manual of NAVELEX. Thus, the Principal Development Agents (PDAs), those whose products must perform effectively in the tactical electromagnetic

operational environment have not in reality organized to incorporate this consideration in their developmental and productive efforts. This is evidenced by continuing disclosures of EMI, EMV, RADHAZ and HERO problems; problems of years' standing still unresolved; and parochialism and lack of coordination in early stages of interfacing equipments development. A clear well-defined effort in SYSCOMs/CNM Designated Project Management offices does not exist.

6.2.2.2. Recommendation

Establish clearly identified offices to prosecute the tactical electromagnetic efforts in NAVAIR, NAVSEA, and NAVLEX. Establish Focal Points in the other SYSCOMs and CNM Designated Project Manager offices. This course of action has the advantages of providing a continuum of responsibility, a dedicated problem eliminating and solving effort throughout the NMC, and ready avenues for information, coordination and standardization flow among the SYSCOMs. This action is incorporated in the proposed POA&M, and in implementing documentation, enclosure (2). Staffing for key offices is addressed in Section 6.4.

6.2.2.3.. Alternatives

(1) Establish clearly identified focal points in all SYSCOMs and CNM Designated Project Manager Offices. This course of action would identify access points for the effort in all NMC major components. However, it would not facilitate accomplishing necessary actions to achieve results in the major PDAs--NAVAIR, NAVSEA and NAVLEX.

(2) Establish tactical electromagnetic effort offices in all SYSCOMs and CNM Designated Project Offices. This would provide unneeded capacity in certain areas, and would in essence be overkill.

(3) Continue the present organization, wherein the NMC Director TEMP double-hats in prosecution of NAVELEX programs, and other SYSCOMs/CNM Designated Project Management offices provide a low-key effort. Results are apparent - less effective than they should be.

6.2.3. The Tactical Electromagnetic Effort Designation

6.2.3.1. Discussion

The Tactical Electromagnetic Program, known as TEMP, has been of limited impact in the NMC. The OPNAV TEMP organization was eliminated as a CNO staff entity several years ago. That a tactical electromagnetic effort is needed is evidenced by the number and complexity of problems to be solved. An intensified, revived and renamed effort is required. There are several compelling reasons for redesignation of the NMC tactical electromagnetic effort. These are:

(1) The "TEMP" acronym is associated with the concept of centralized management of the programs, which is recommended for discontinuance by the Council.

(2) The acronym "TEMP" has come into general usage throughout the NMC for representing "Test and Evaluation Master Plan."

(3) The "TEMP" acronym is not accurately descriptive of the NMC tactical electromagnetic effort. This effort, conceptually, is one of coordination, i.e., directive (staff) management, rather than productive (line) management.

6.2.3.2. Recommendation

That the title and acronym used in the proposed documentation, Tactical Electromagnetic Coordination and Standards (TECS) be adopted.

6.2.3.3. Alternatives

(1) Tactical Electromagnetic Systmes Standardization and Integration (TESSI). This title tends to be over-complex, yet, at the same time, not adequately descriptive.

(2) Tactical Electromagnetic Systems Standardization, Integration and Compatability (TESSIC). This title is overly and needlessly cumbersome.

(3) Electromagnetic Systems Standards Office (ESSO). This is not sufficiently inclusive, and relates directly only to the "Office", not to the effort.

(4) Tactical Electromagnetic Programs (TEMP). Retain the present title. Not desirable for foregoing rationale.

6.2.4. Tactical Electromagnetic Programs Master List

6.2.4.1. Discussion

The defined purpose of this list was to identify work efforts and generic problem areas under some degree of control by the Director, TEMP. The currently effective list was promulgated in NAVMATNOTE 5000 of 11 April 1974, and has not been superceded. Efforts are categorized in four groups, according to the nature of the work effort/generic problem, and an attempt is made to delineate degrees of financial control and participation by the Director, TEMP.

As a practical matter, it appears that the extent of current usage of this List is as a guide for correspondence routing.

6.2.4.2. Recommendation

Cancel the TEMP Master List and do not replace.

6.2.4.3. Alternatives

(1) Retain the Master List, but update. Since the list is not used as a basis for tactical electromagnetic coordination efforts, a simple updating of the List would not be adequate for it to be a useful tool.

(2) Revise the basis for categorization of work efforts and programs in the Master List, and then reassess projects/programs/efforts to be placed in each category. This effort would provide a more useful tool in support of the effort. However, with a Charter of adequate specificity and direction it is not believed that a Master List is required.

6.3. Program Management

6.3.1. Discussion

With TECS Offices and clearly identified Focal Points in the SYSCOM's and CNM Designated Project Management Offices, respectively, the coordinative and monitoring responsibilities of the CNM TECS Office will be of such magnitude as to require the complete dedication of available resources towards these ends. Accordingly, some responsibilities for program management are recommended to be removed from the Director, TECS. Such programs are MUTE, U.S. HULTEC Vulnerability, EB47/KC135, and EMPASS. The first of these programs involves

the actual development of equipment; the second involves software development and sponsorship of laboratory programs; and the latter two involve operation of aircraft. There are existing offices in the various SYSCOMs to which these programs should be assigned for actual management.

Appropriately, however, the Director TECS should identify the need for such programs as above and vigorously solicit support for their prosecution, in the programming and budgeting arena. This is compatible with his coordinative role. Only tactical electromagnetic program funding for R&D efforts in the areas of standards and criteria should be planned and managed by the Director, TECS.

6.3.2. Recommendations

(1) That management of the MUTE program be transferred to ELEX 05 as is being planned (presently a QRC assignment to ELEX 095).

(2) US HULTEC Vulnerability be reassigned for management as recommended by NAVMAT 03, NAVMAT 051 and Director TECS.

(3) The EB47/KC135 and EMPASS programs be transferred to the management of ELEXTECS (with the present ELEX 095 billets to accompany the responsibility).

6.3.3. Underwater Acoustics

The propriety of inclusion of tactical electromagnetic efforts relative to underwater acoustic systems under the correlative responsibilities of the Director, TECS, has been considered by the Action Council. In view of the unique aspects of underwater programs, the question has been raised as to the advisability of assigning underwater acoustics tactical electromagnetic efforts to the province of

the Director, Anti-Submarine Warfare Systems Project, PM-4. The Action Council recommends that this be determined separately, by representatives of MAT-051, PM-4 and Director TECS under the coordination of MAT 051. Milestones for the accomplishment of this decision are incorporated in the POA&M, Section 7, of this report.

6.4. Organization and Staffing

To provide for adequate discharge of responsibilities in the NAVMAT and SYSCOM tactical electromagnetic effort, staffing realignments will be necessary. Based on the recommended establishment of the NAVMAT TECS Office and for the SYSCOMs TECS Offices, it is incumbent on the TESS Action Council to address staffing. Although every effort has been made to accommodate realignments within current personnel allowances, this has not been possible in some few instances, where such is the case, additions are specifically identified.

6.4.1. Deputy Chief of Naval Material, Systems Effectiveness (MAT 06)

The establishment of a Deputy Chief of Naval Material, Systems Effectiveness, is believed to be a logical action in providing a focus for identification and solution of those problems. From a material viewpoint, the Tactical Electromagnetic effort and the Reliability and Maintainability effort are both disciplines directed toward effectiveness. The organizational structure within MAT 06 could be two divisions, both under the Deputy CNM, Systems Effectiveness.

6.4.2. Reliability and Maintainability Division (MAT 062)

The structure of the proposed Reliability and Maintainability

Division (MAT-062) is not addressed by this report, since it is not viewed as being within the purview of this Action Council.

6.4.3. TECS Division (MAT 061)

The organization and staffing of the existing NAVELEX 095 has been examined relative to the responsibilities and tasks set forth in the proposed Charter for the NAVMAT TECS Office (MAT 061), Appendix (A) to enclosure (2). The proposed organization and staffing for the NAVMAT TECS effort is presented graphically in Figures 6-1, 6-2 and 6-3, following.

6.4.4. SYSCOM TECS Offices

6.4.4.1. NAVELEX

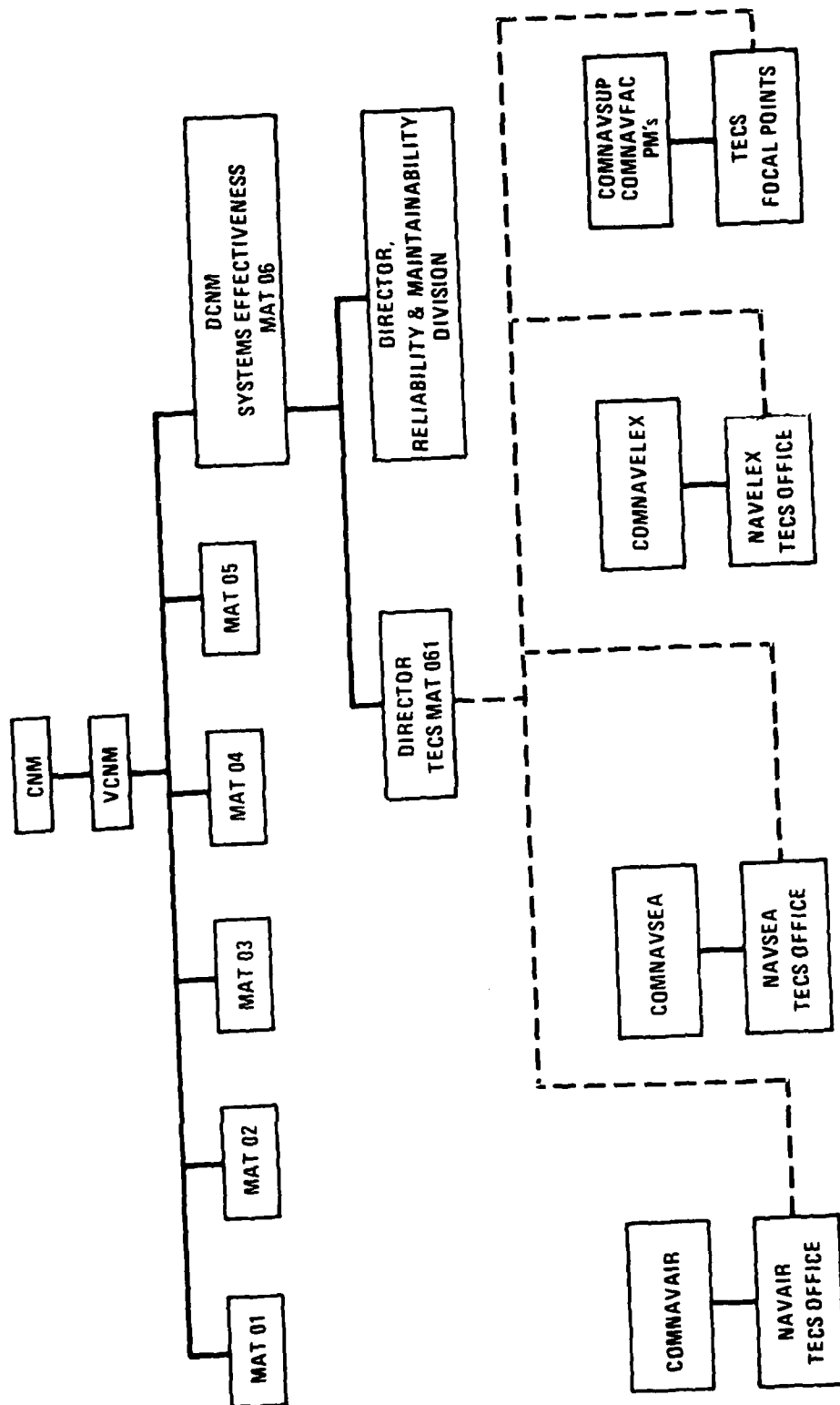
The proposed NAVELEX TECS Office would be established within the Engineering Directorate (ELEX 510) of NAVELEX. Two billets from the existing ELEX 095 office will be transferred to the ELEX TECS Office as nucleus personnel.

6.4.4.2. NAVSEA

The NAVSEA TECS Office (SEA 06T) would require no change from its existing structure.

6.4.4.3. NAVAIR

The NAVAIR TECS Office (AIR 533D3), to adequately perform its assigned tasks, will require the addition of one Navy O-5, and clear identification of the existing AIR-533D3 and AIR-533D31 billets as being TECS dedicated. Secretarial assistance from this office would be identified from the within the AIR-533 organization.



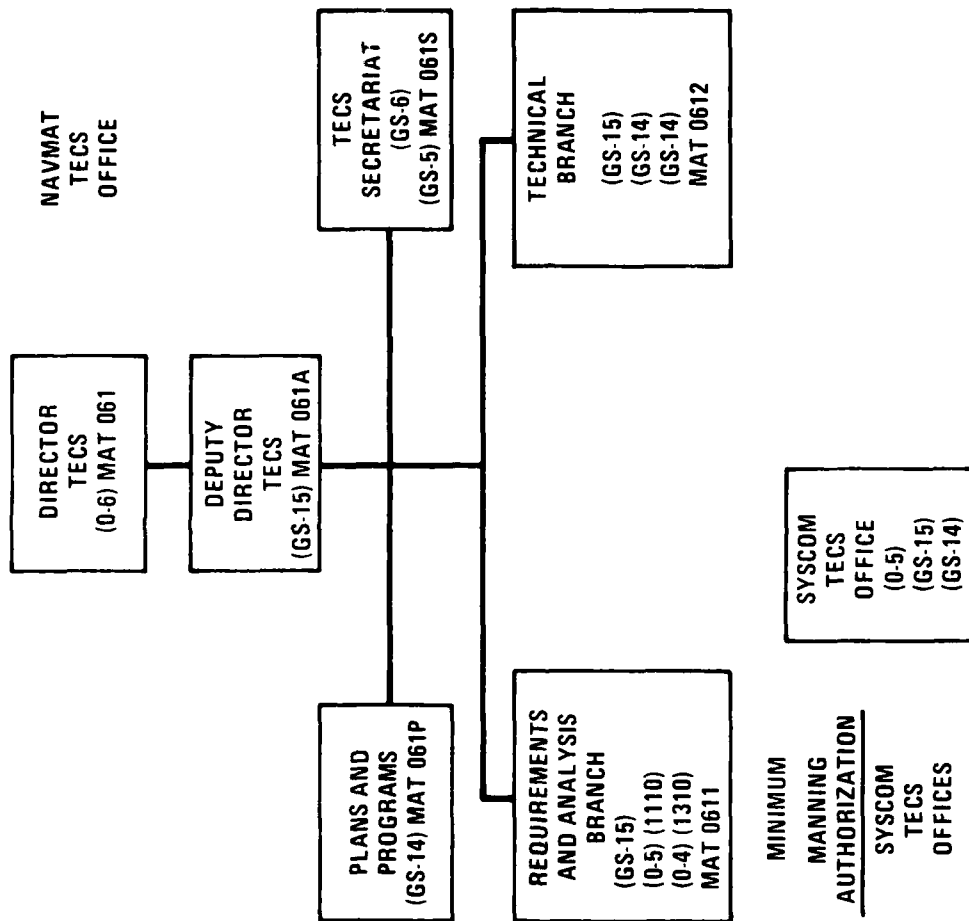


FIGURE 6-2 PROPOSED TACTICAL ELECTROMAGNETIC COORDINATION AND STANDARDS
AUTHORIZED ALLOWANCES (IDEAL)

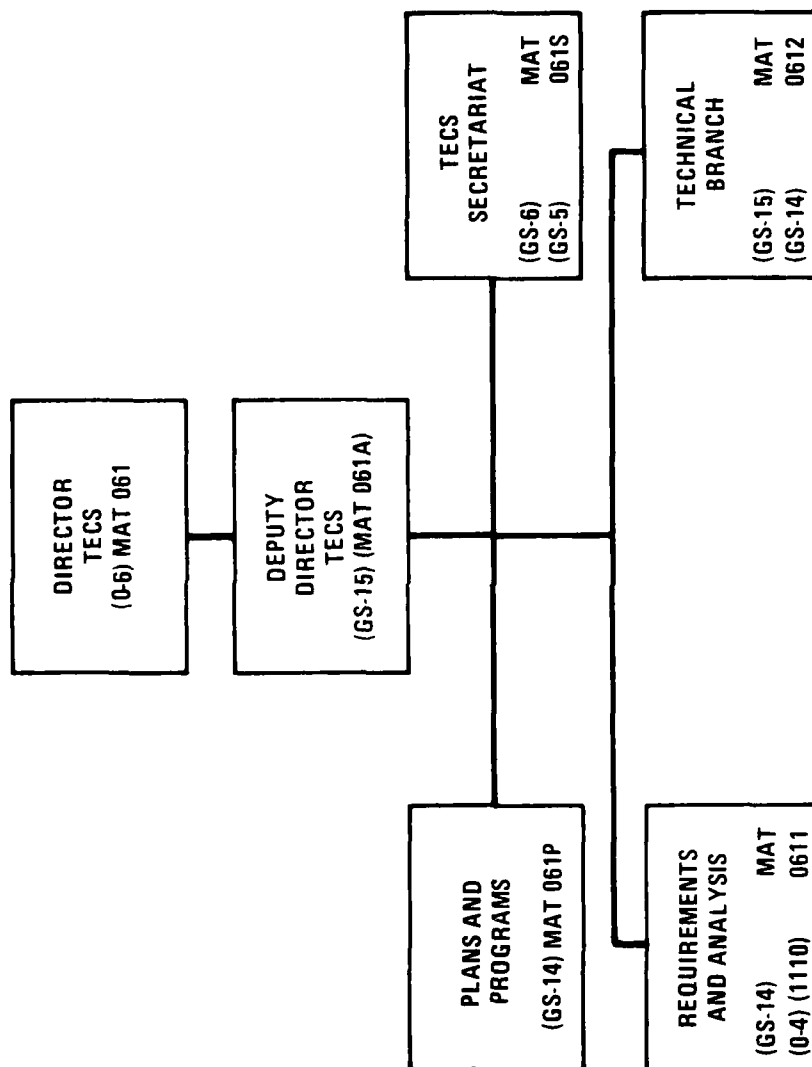


FIGURE 6-3 PROPOSED TACTICAL ELECTROMAGNETIC COORDINATION AND STANDARDS OFFICE
MANNING (IMMEDIATE FUTURE)

6.4.4.4. Focal Points

Identification of additional, dedicated billets for NAVFAC, NAVSUP, and CNM Designated Program Management Offices are not required. It will be necessary that focal points for TECS matters be identified to the Director TECS, however.

6.5. Funding

6.5.1. Support Funds

The funding support of the NAVMAT TECS Office and for the three SYSCOM TECS Offices should appropriately be provided within the source framework and through the same procedures as other staff entities within the parent organizations. O&M,N sources for general administrative and operational requirements will be required for the general support funds in the FY-77 year, and introduced and acquired through the programming and budgeting process for future years.

6.5.2. Program Funds

Funding for the NAVMAT TECS Office in the execution of R & D tasks will require the Director, TECS, to represent support from the Chief of Naval Development (MAT 03) in the Exploratory Development (6.2) and R & D Management (6.5) areas. A formalized procedure for requests, including substantiation, dollar amounts and other pertinent factors, would be established between the two principals. Cognizant SYSCOM Commanders should, appropriately, be responsible for programming and budgeting for ongoing developmental programs (6.3, 6.4 and 6.5 funds) in the tactical electromagnetic area. These funds would be administered through the SYSCOMs TECS offices.

6.5.3. CNM-SYSCOM Coordination

The Director, TECS will establish procedures to accomodate requirements for funding of future EM developmental programs in the SYSCOMs, for Navy Program 6.3, 6.4, 6.5 and O&MN,N funds. It is therefore appropriate that SYSCOM submissions for the program funding for TECS matters include the recommendations to the Director, TECS, in the discharge of his coordinative responsibilities. He should, therefore, review SYSCOM's TECS program submissions and provide his comments to the CNM. It would not be the intent of any such review to infringe upon SYSCOM's statutory responsibilities for program control.

The following recommendations are included in the proposed Charter for the Director, TECS, in Appendix (A) to Enclosure (2).

7. PLAN OF ACTION AND MILESTONES

The plan of action and milestones which would implement the recommendations of Section VI, foregoing, are set forth chronologically below and graphically in Figure 7-1. Close coordination, monitoring and impetus will be needed to bring the proposed actions to realization. It is recommended that these responsibilities be assigned to the Director, Management Division, Headquarters NMC (MAT-051), for accomplishment. An alternate procedure would be for the TESS Action Council to serve as the implementing activity. The Action Council, however, in accordance with the directive establishing it, completes its deliberations and activities upon submission of this report. Accordingly, a new directive would be required, tasking the Action Council with the responsibility for coordinating the implementation. The Action Council can produce such a directive if desired.

It is recommended that monthly progress reports be required of the implementing activity, to be made to the Vice Chief of Naval Material, setting forth the status of implementing actions and any problems which may occur in connection therewith.

The recommended plan of action and milestones have been developed on the basis of a philosophy of practicality, economy and effectiveness. These considerations have been kept in mind constantly through the analyses and deliberations of the Action Council, and it is believed that the recommended actions reflect this concept.

TACTICAL ELECTROMAGNETIC EFFORT

PROPOSED PLAN OF ACTION

AND MILESTONES

<u>DATE</u>	<u>ACTION</u>
1 March	TESS Action Council deliver report to CNM. (POA&M for TEMP via COMNAVELEX).
1-12 March	Preliminary review of report by recipients.
19 March	COMNAVELEX forward TEMP POA&M to CNM, by endorsement, after review.
22-March- 9 April	Staff, CNM review, proposed management actions and problem solutions.
9 April	CNM approve execution of proposed POA&M leading to decision point on 11 June.
9 April	Proposed management actions and documentation to SYSCOM members for review and comment.
12 April- 30 April	PM 03 MAT 051 and ELEX-095 consider reassignment of management of U.S. HULTEC Vulnerability program.
12 April- 30 April	COMNAVELEX examine assignment of EB47/KC135 and EMPASS programs.
12 April- 30 April	SYSCOM Commanders comment to CNM on proposed management actions and documentation.
1 May	MAT 03, MAT 051 and ELEX-095 recommend appropriate assignment of HULTEC program management to CNM via COMNAVELEX.
11 May	COMNAVELEX designate reassignment of EB47/KC135 and EMPASS program within NAVELEX.
1-14 May	MAT 051 review and correlate SYSCOM comments and recommendations on proposed TECS management actions and documentation.
1-21 May	COMNAVELEX review recommendations for assignment of HULTEC program.
21 May	COMNAVELEX recommend to CNM assignment of HULTEC program.

16-28 May	MAT 051 and representatives of SYSCOMS resolve TECS management and documentation recommendation differences.
1 June	MAT 051 recommend TECS Management actions to CNM/DCNM.
11 June	CNM/VCNM announce decisions on TECS management and HULTEC assignment.
15 June - 29 June	MAT 051 process initial directives for TECS management.
1 July	Deputy CNM for Systems Effectiveness (MAT-06) established. Director TECS and staff report to CNM for duty on staff. CNM issue NAVMATINST 5430. __, with TECS charter as Enclosure (1)
1-16 July	MAT 051 finalize change to NMC Organization Manual and staff, CNM, Organizations Manual.
1-16 July	NAVELEX finalize change to NAVELEX Organization Manual
1-30 July	Director, TECS review and modify directives applicable to TECS program.
1 August	COMNAVAIR, COMNASEA and COMNAVELEX establish TECS Offices, COMNAVSUP, COMNAVFAC and PM designate TECS points of contact.
5 August	CNM issue directive and organizational manual changes. COMNAVELEX issue organizations manual change.

PROPOSED DOCUMENTATION

1. The implementation of the management and organizational realignments proposed and substantiated in the basic report will require a relatively extensive revision of existing directives. The timeframes for review, approval and implementation of required executions of modifications to existing organizations and currently effective directives were developed on the basis of the directive and organization manual changes provided herewith as attachments. These attachments are referenced in the 2004&M

set forth in Section 7. foregoing and have been designed as an inter-related set, to facilitate implementation, satisfying subparagraph 3.b of NAVMAT NOTICE 5430 of 29 August 1975.

2. The attachments as listed below are the basic documentation, identified by the TESS Action Council required to provide impetus to and appreciably improved management of the Navy's electromagnetic programs. The Tactical Electromagnetic Programs Master List, as promulgated in NAVMAT NOTICE 5000 of 11 April 1974, has been addressed by the Action Council and its cancellation recommended.

3. Proposed documentations are as follows:

- a. NAVMAT INSTRUCTION 5430.__, Subj: Tactical Electromagnetic Systems Coordination and Standards.
- b. NAVMAT INSTRUCTION 5460.2A, Subj: Naval Material Command Organization; change transmittal.
- c. NAVMAT INSTRUCTION 5430.33D, Subj: Headquarters Naval Material Command Organization Manual: change transmittal
- d. NAVELEX INSTRUCTION 5430,1A, Subj: Naval Electronics Command Organization Manual: change transmittal.

ENCLOSURE (2)

NAVMAT INSTRUCTION 5430.

From: Chief of Naval Material

Subj: Tactical Electromagnetic Coordination and Standards (TECS)

Ref: (a) NAVMAT NOTE 5430 of 21 May 1973

(b) NAVMAT NOTE 5430 of 19 June 1973

(c) NAVELEXINST 5430.16 of 18 July 1973

(d) NAVELEXINST 5430.19 of 18 Apr 1974

(e) NAVMAT NOTE 5430 of 29 Aug 1975 (NOTAL)

Encl: (1) Responsibilities for Tactical Electromagnetic Coordination
and Standards Office (MAT-061)

(2) Minimum contents for SYSCOM (Less NAVFAC and NAVSUP) TECS
office Charters

1. Purpose

a. To establish the Tactical Electromagnetic Coordination and Standards Office (TECSO) under the direction of the Chief of Naval Material.

b. To promulgate a TECSO charter setting forth the policy, scope, authority, responsibilities and operating relationships of the TECS Office within the Naval Material Command.

c. To establish minimum responsibilities and scope of activities for TECS Offices in the Systems Commands other than NAVFAC and NAVSUP.

2. Cancellation. The Commander, Naval Electronic Systems Command will cancel NAVELEXINST 5430.19 upon receipt of this Instruction.

3. Background

a. The Chief of Naval Material assigned responsibility for Tactical Electromagnetic Programs (TEMP) by reference (a) and provided amplifying

APPENDIX (A)
to ENCLOSURE (2)

guidance in reference (b). In reference (c), COMNAVELEX established a TEMP Office and tasked it to develop a concept of operations. The current TEMP Charter was promulgated in reference (d).

b. The CNM established an action council, by reference (e), to review the Tactical Electromagnetic Systems Study (TESS) Report, and tasked it with recommending changes which will optimize Navy electromagnetic capabilities. This Council has completed its review and has made recommendations. A redirection of effort was indicated by the Council as being necessary to improve electromagnetic capabilities, with implementing modifications to the existing management and coordination needed to achieve this goal. Directives have been prepared toward this end, realigning responsibilities and providing greater responsiveness in the tactical electromagnetic spectrum of activities.

4. Action

a. The Tactical Electromagnetic Coordination and Standards (TECS) effort is established, replacing the Tactical Electromagnetic Program (TEMP) in NMC.

b. A TECS Division is hereby established on the staff of CNM; designated as MAT-061; and reporting and responsible to the DCNM, Systems Effectiveness, the latter established by separate correspondence.

c. Administrative support will be furnished by the Commander, Naval Electronic Systems Command.

d. The TECS Division (MAT-061) will perform functions as set forth in enclosure (1).

e. The Systems Commanders with the exception of COMNAVFAC and

COMNAVSUP will establish clearly identified TECS Offices within their staffs, from existing resources. Charters for these offices, shall include as a minimum, the contents as set forth in enclosure (2).

f. COMNAVFAC, COMNAVSUP and Designated CNM Project Management Offices shall designate clearly identified points of contact for TECS matters within their staffs.

g. SYSCOM TECS offices and points of contact will complement and assist the NAVMAT TECS Division. Previous TEMP operating agreements and procedures will be revised in consonance with this directive and its enclosures.

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CHARTER FOR THE DIRECTOR
TACTICAL ELECTROMAGNETIC COORDINATION
AND STANDARDS OFFICE

1. Introduction. The Chief of Naval Operations established an Office of Tactical Electromagnetic Programs (TEMP) (OP-093) in 1971, and directed the Chief of Naval Material to establish a counterpart organization within the Naval Material Command. The responsibilities for tactical electromagnetic programs have since been transferred within OPNAV, currently being under the aegis of the DCNO Surface Warfare (OP-03). The Chief of Naval Material initially established a TEMP office under a program manager, PM-07T, and later transferred the responsibilities for managing the TEMP effort to the Commander, Naval Electronic Systems Command. A TEMP office (ELEX-095) was established within NAVELEX, with points of contact being designated within NAVAIR, NAVSHIPS, and NAVORD, the latter two subsequently becoming a single point of contact in NAVSEA on the consolidation of the two SYSCOMS. It has become apparent that TEMP and the NAVMAT TEMP Office (ELEX-095) has become identified with NAVELEX as a single Systems Command effort. Accordingly, a realignment to vitalize NAVMAT-wide functions is necessary. The Commander, Naval Electronic Systems Command will continue to provide administrative support. The effort is redesignated Tactical Electromagnetic Coordination and Standards (TECS). The Director, TEMP, and assigned personnel are reassigned as Director, NAVMAT TECS Office and staff. Staff designation is MAT-061 for execution of assigned functions. The responsibilities and functions of NAVMAT TECS Office are set forth in this Charter.

ENCLOSURE (1)
to APPENDIX (A)

2. Mission. To exercise for the Chief of Naval Material centralized, planning, coordination, assessment and integration of the NMC TECS program in support of CNO policies and requirements in order to provide the Navy with balanced, compatible, effective and countermeasures-resistant electronic systems and equipment in an operational environment. This mission encompasses electromagnetic compatibility (EMC), counter-measure, counter-countermeasure vulnerability assessment, electromagnetic vulnerability (EMV) including uniquely pulsed and high energy effects, the study and understanding of the electromagnetic environment, the reduction of unintentional radiation and the control of emissions (EMCON) and the reduction of radiation hazards (RADHAZ, HERO). The management of programs is not within the purview of this mission.

3. Scope of the TECS Effort in the Naval Material Command. The scope of the TECS effort includes those activities required to ensure integration and coordination of work efforts performed by components of the Naval Material Command to enable comprehensive assessment and planning for elimination of tactical electromagnetic system and equipment deficiencies.

4. Definitions. For the purpose of this Charter, the following definitions shall apply:

a. Tactical Electromagnetic Systems. Those electronic systems/equipments, which are essential to the offensive or defensive combat capability of a Task Force. Included are weapon systems, sensor systems, navigation systems, electronic warfare systems, tactical reconnaissance/surveillance systems, tactical intelligence collection systems,

communications systems, underwater acoustics systems*, command and control systems used by a Task Force in a tactical environment, including countermeasures and counter-countermeasures. These systems are developed procured and supported by Naval Systems Commands and Designated Project Management Offices.

b. Director, TECS. The individual assigned responsibility for coordinating, integrating and monitoring the Tactical Electromagnetic effort in the Naval Material Command, through review of planning and programming of resources, monitoring of resource applications, and issuance of guidance, standards, and recommendations to ensure satisfaction of requirements for electromagnetic systems and equipment.

c. Coordination and Integration Authority. That guidance, direction and monitorship exercised by the Director, TECS, relative to work efforts and tasks performed by Naval Systems Commands and CNM Designated Project Management Offices, in their capacity as Principal Development Authority, involved with tactical electromagnetic systems, equipments, and components thereof, which will ensure effective, compatible and balanced task force combat weapons systems in an operational environment.

5. Concept of Operations.

a. The Deputy Chief of Naval Material, Systems Effectiveness, MAT-06, will provide technical guidance to the Director, TECS. His role will be one of collecting and analyzing information relative to fleet readiness in the tactical electromagnetic area; and providing supervisory guidance to the Director, TECS. He will exercise general management

*To be considered separately for elimination from TECS effort.

and coordination of the TECS effort, ensuring that requirements are addressed and met.

b. SYSCOM Commanders and CNM Designated Project Management Offices will:

(1) Participate in the TECS effort as integral to their responsibilities for management, technical direction, and material support as prescribed in respective charters. Accommodate TECS implications at the earliest possible time in acquisition plans, preferably during the conceptual phase.

(2) SYSCOM Commanders, except COMNAVSUP and COMNAVFAC, designate TECS Offices within their organizations, to serve as counterparts to the NAVMAT TECS Office. COMNAVSUP, COMNAVFAC and Designated Project Managers designate clearly identifiable TECS focal points within their organizations.

(3) Be responsive to, enlist the assistance of, and provide pertinent information, including programming and budgeting, to the Director TECS, in matters relating to the TECS effort.

(4) Coordinate with offices of OPNAV, keeping the Director TECS, informed.

(5) Coordinate with other SYSCOMS when their respective efforts interface, or when it appears they may interface. If EMC problems are to be avoided, this action is vital.

c. A working relationship of common goals and mutual support between the Director TECS and SYSCOM/Project Manager TECS Offices and Focal Points is crucial to the effective execution of tactical electromagnetic efforts. This relationship encompasses two-way communications

between participants. It is incumbent upon the Director, TECS, to provide guidance to SYSCOM/Project Management Office, TECS Offices and Points of Contact. Conversely they shall keep the Director, TECS, advised as to program status and need for support or assistance.

6. Director, TECS, Authority and Responsibility. For the purpose of this Charter the following authority and responsibility is assigned:

a. Act for the Chief of Naval Material in all matters affecting compatibility (EMC), vulnerability (EMV), and pulse (EMP) of tactical electromagnetic programs. This includes initiating directives for CNM signature, as appropriate, to implement CNM or CNO doctrine, plans and policies.

b. Provide technical advice to Offices of OPNAV on electromagnetic state-of-the-art. Also, advise OPNAV on the material implications resulting from policy or doctrine changes, or the lack thereof.

c. Establish and promulgate to SYSCOMS and CNM Designated Project Management Offices equipment and combat system proposed criteria for design standards, operation, analysis and evaluation based on CNO requirements.

d. Maintain an awareness of test procedures and test results for conformance to technical parameters criteria, and standards.

e. Review operational reports and exercises to evaluate equipment, systems and platform EM performance.

f. Review documentation including, but not limited to: Development, Procurement, and Support Plans; Equipment Specification and Engineering Change Proposals; and, Test and Evaluation Plans. NMC organizations will include Director, TECS in the distribution of these documents, when EMC

EMV or EMP aspects are apparent.

g. Participate in the decision-making process with the Chief of Naval Development on applicable portions of the Exploratory Development Program in EMC, EMV and EMP aspects.

h. Review programs and projects for equipments and software efforts intended for analysis, monitoring, measuring or evaluating tactical fleet EM performance of equipment, systems and platforms to ensure they are coordinated and to ensure that fleet requirements are met.

i. In particular, the Chief of Naval Material has delegated the following authority and responsibility to the Director, TECS relative to CM vulnerability assessment and CCM improvements:

(1) To ensure analysis and evaluation of vulnerabilities to CM are considered, and that the subsequent planning and development of correction of these vulnerabilities for communications, acoustic* and tactical electromagnetic systems defined in paragraph 4.a are conducted.

(2) To ensure that SYSCOMS and CNM Designated Project Management Offices give due consideration in effectiveness and trade-off studies to incorporation of CCM capabilities into the above electromagnetic systems design, development and acquisition.

(3) To review and comment on budgetary submissions for electromagnetic systems, to ensure CCM capability.

(4) To assist in the development of plans for backfit and installation of a CCM capability in electromagnetic equipment already deployed in the Fleet.

(5) To coordinate among SYSCOMS and CNM Designated Project
* To be considered separately for elimination from TECS effort.

Management Offices in the budgeting and support for test and evaluation in the field of countermeasures vulnerability reduction and counter-countermeasures improvement.

(6) To coordinate countermeasures vulnerability reduction in all electromagnetic and underwater acoustic systems.*

j. For other items within his centralized coordination, monitoring and integration area of responsibilities the Director, TECS will recommend budgetary submissions for selected items and for reprogramming actions.

7. System Command TECS Offices

a. The Commanders, NAVAIR, NAVSEA, and NAVELEX shall establish a clearly identifiable TECS Office, whose responsibilities will be defined by a Charter issued by the SYSCOM Commander. At a minimum, the contents as set forth in enclosure (2) shall be included.

b. The senior member of each SYSCOM TECS Office will be the primary representative of his SYSCOM Commander. In this capacity, he will require lateral and vertical access within the Command, to enable effective action, comprehensive knowledge of programs, and current information on Command-wide efforts with EMC, EMV, EMP, CM and CCM implications.

c. The Director, TECS will have direct access to each SYSCOM TECS Office, on matters concerning the TECS effort. All matters involving policy, direction, personnel performance and material readiness will be addressed through normal Command channels.

* To be considered separately for elimination from TECS effort.

8. Systems Commands and CNM Designated Project Management Office Focal Points

- a. The Commanders, NAVFAC and NAVSUP, and CNM Designated Project Management Offices will designate clearly identifiable Focal Points.
- b. SYSCOM/Project Management Office Focal Points will serve as primary points of contact for their Command/Project Manager in matters relating to tactical electromagnetic efforts.
- c. The relationships of Focal Points shall be as prescribed for SYSCOM TECS Offices in subparagraphs 8.b and 8.c, foregoing.

9. Administrative Support and Funding

- a. Administrative support of the TECS Office (MAT 061) will be provided by the Commander, Naval Electronics Systems Command.
- b. Funding for the operation of the NAVMAT TECS Office will be provided in the same manner as other NAVMAT staff offices. This will include support for execution of assigned tasks, except those which are appropriately in the R&D area. The Director, TECS will request support from the Chief of Naval Development for funding in the Exploratory Development (6.2) and R&D Management (6.5) areas. A formalized system for requests and support, to ensure adequate provision for prosecution of TECS efforts will be established by the two principals. Funding for ongoing developmental projects (6.3, 6.4 and 6.5 funds) in the tactical electromagnetic area will remain with the cognizant SYSCOM Commanders, and administered by the respective SYSCOM TECS Offices.

c. For future developmental EM programs requiring funding, the Director, TECS will establish a formalized procedure with supporting documentation to provide for SYSCOM 6.3, 6.4, 6.5 and O&M,N funding submits for support of TECS implications in their programs. The SYSCOMS submissions for development funding to accommodate TECS implications will include the recommendations of their respective TECS Offices. The Director, TECS will be afforded a review of these submissions, and his own comments and recommendations to the CNM. Priority among and within programs will be specifically addressed. In no instance will the statutory authority or responsibility of the SYSCOM Commanders be infringed upon.

MINIMUM CONTENTS
SYSCOM TECS OFFICE CHARTERS

Background

Mission

Scope of TECS Effort in SYSCOM

Authority and Responsibility

SYSCOM TECS Organization and Support

ENCLOSURE (2)
to APPENDIX (A)

NAVMAT INSTRUCTION 5460.2A CHANGE TRANSMITTAL

FROM: Chief of Naval Material

SUBJ: Naval Material Command Organization Manual

Encl: (1) Revised pages III-8, III-11, III-21, A-2 and A-4

1. Purpose. To change the basic instruction to reflect the reassignment of management of tactical electromagnetic programs within the staff of the Chief of Naval Material.

2. Action. Remove pages III-8, III-11, III-21, A-2 and A-4 to the basic and replace with enclosure (1).

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MAT 051

APPENDIX (B)
to ENCLOSURE (2)

Material Command on electronics matters to the extent required to act authoritatively for the Naval Material Command on such technical matters:

- c. develops and manages a program (TEMPEST) for measurement and control of unintentional compromising electromagnetic emissions from naval units, and provides executive direction and guidance in these matters to the extent delegated or specified by the Chief of Naval Material;
- d. provides operational control and administrative support of the Naval Material Command intelligence program;
- e. provides administrative support for the NAVMAT Tactical Electromagnetic Coordination and Standards Office. (R)
- f. ensures that due consideration is given in systems and equipment acquisitions and modifications within NAVELEX to: (A)
electromagnetic compatibility, countermeasures, counter-countermeasure vulnerability, electromagnetic vulnerability including nuclear pulse and high energy effects, the reduction of unintentional radiations, and the reduction of electromagnetic radiation hazards.
- g. provides system integration and coordination authority over Naval Material Command efforts with respect to Navy space components and systems;
- h. provides system integration and coordination authority over Naval Material Command efforts with respect to reconnaissance, electronic warfare, special operations, and naval intelligence systems (REWSON);
- i. provides centralized coordination of the naval telemetry program within the Naval Material Command;
- j. acts as the Department of the Navy Manager for PTTI (precise time and time interval), including distribution and dissemination thereof.

2. Air Systems Integration Responsibility.

a. The Naval Air Systems Command is assigned total system integration responsibility with respect to aircraft weapons systems, to be exercised in accordance with system integration plans to be developed jointly with other Systems Commands or Project Managers who are assigned responsibility for other supporting systems. System integration responsibility extends through the life-cycle of the aircraft weapon system, and includes requirements for and certification of aeronautical support facilities aboard ships and aviation shore/field activities.

b. The Naval Air Systems Command is also assigned the responsibility for:

(1) coordinating material support functions performed by other Systems Commands to the extent required for adequate acquisition and support of the aircraft and assigned weapon systems as an engineering and functional whole.

(2) providing requirements to the Naval Sea Systems Command for the accommodation of aviation systems on both aviation and non-aviation ships.

3. Administrative and Technical Support and Guidance. In addition to providing other support and guidance as appropriate in connection with its assigned material support responsibilities, the Naval Air Systems Command shall:

a. provide comprehensive technical guidance covering aviation safety;

b. act as a primary technical authority for avionics and aeronautical systems. The Naval Air Systems Command will be the primary point of contact within the Naval Material Command on avionics and aeronautical matters to the extent required to act authoritatively for the Naval Material Command on such technical matters;

c. perform central planning, management, and coordination of major naval ranges and targets, as assigned by the Chief of Naval Material;

d. manage the Naval Oil Analysis Program (NOAP) for aeronautical equipment and the NOAP technical support activity for spectrometric testing of oil.

e. ensure that due consideration is given in systems and equipment acquisitions and modifications within NAVELEX to: electromagnetic compatibility, countermeasures, counter-measure vulnerability, electromagnetic vulnerability including nuclear pulse and high energy effects, the reduction of unintentional radiations, and the reduction of electromagnetic radiation hazards. (R)

enumerated above, the Naval Sea Systems Command shall:

- (1) establish methods and procedures for the dry-docking of all naval ships and craft; and,
- (2) prepare and issue safety precautions and instructions in connection with the safety of ships and craft.
- (3) ensure that due consideration is given in platform, systems and equipment acquisitions and modifications within NAVSEA to: (A)
electromagnetic compatibility, countermeasures, counter-countermeasure vulnerability, electromagnetic vulnerability including nuclear pulse and high energy effects, the reduction of unintentional radiations, and the reduction of electromagnetic radiation hazards.

a. As Navy Coordinator of Shipbuilding, the Commander of the Naval Sea Systems Command has authority to:

- (1) issue direction, as may be necessary, direct to other Commands, bureaus, and offices concerned in order to effect the timely delivery of needed materials and technical information for which they are sponsible at the specified shipbuilding and ship repair activities; and,
- (2) represent the Department of the Navy's interests in ship design and shipbuilding, and in shipbuilding and ship repair facilities of other Government agencies and of private industry.

All written orders or instructions relating to the coordination of shipbuilding and ship repair for the Department of the Navy issued by the Navy Coordinator of Shipbuilding shall be considered as emanating from the Chief of Naval Material, the Chief of Naval Operations, and the Secretary of the Navy. The Deputy Commander for Industrial and Facility Management of the Naval Sea Systems Command is Assistant Coordinator of Shipbuilding.

b. As Coordinator of Shipbuilding, Conversion, and Repair for the Department of Defense, the Commander of the Naval Sea Systems Command is assigned those responsibilities cited in DOD Directive 5050.9.

c. As Coordinator for Ship Repair and Conversion for the Department of Defense and the Department of Commerce, in accordance with the letter fo Agreement between DOD and DOC, COMNAVSEA plans for the repair and conversion in the Continental United States shipyards of ships under the control of DOD, DOC or of friendly nations, as provided in the interagency agreement.

d. COMNAVSEA, as designated representative of the CNM, heads the Joint Navy/Marad Design Team. This Charter

HEADQUARTERS NAVAL MATERIAL COMMAND

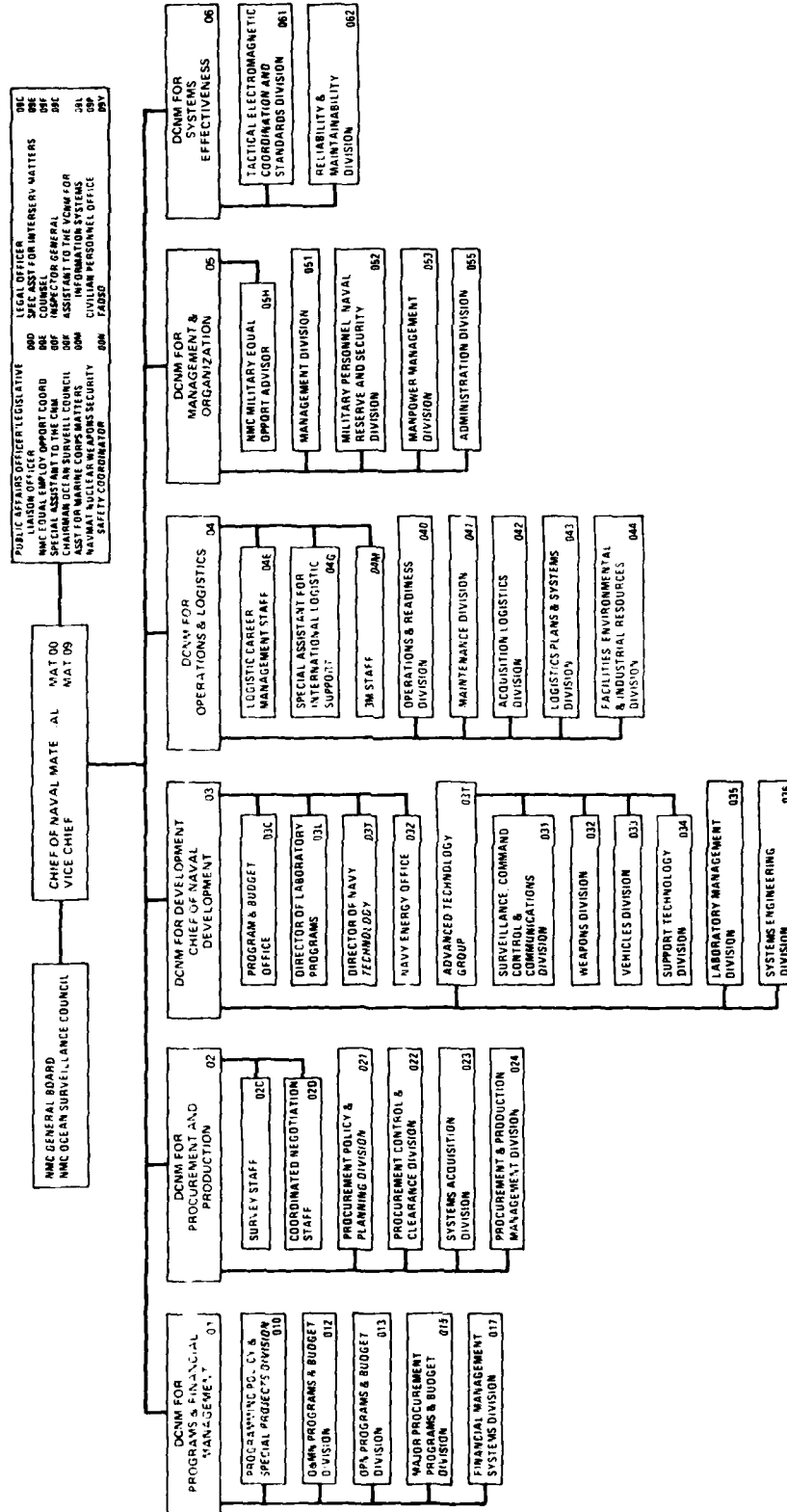
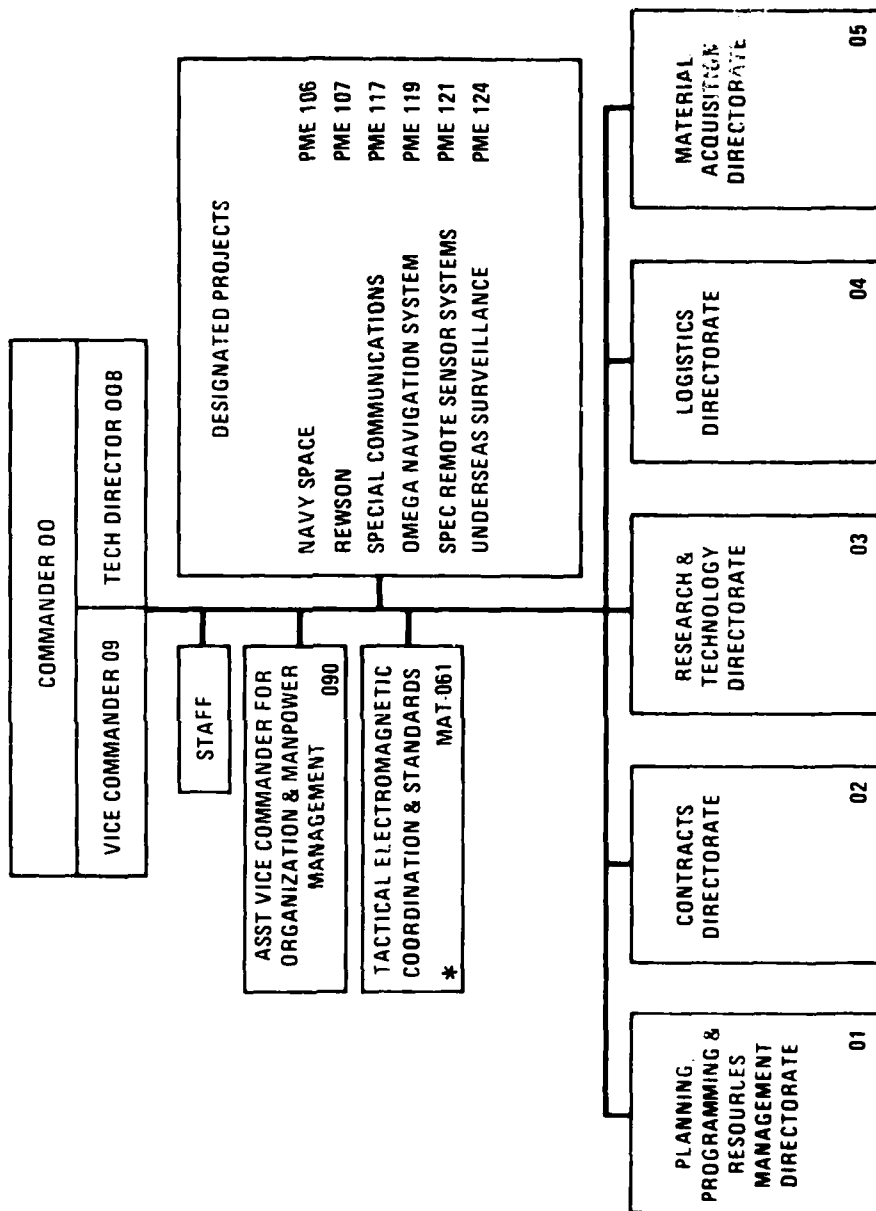


CHART 2

HEADQUARTERS NAVAL ELECTRONIC SYSTEMS COMMAND



* WITHIN NAVELEX FOR ADMINISTRATIVE SUPPORT

CHART 4

NAVMATINST 5430.33D CHANGE TRANSMITTAL

FROM: Chief of Naval Material

SUBJ: Headquarters Naval Material Command Organization Manual

Encl: (1) Revised pages, iv, III-00, and III-06, and new
pages, III-06-1, III-06-2, III-06-3, III-06-4,
III-06-5

1. Purpose. To change the basic instruction to reflect the reassignment of management of tactical electromagnetic programs within the Staff of the Chief of Naval Material.
2. Action. Remove pages iv, III-00, III-06-1 and III-06-2 to the basic, and insert Enclosure (1).

Distribution

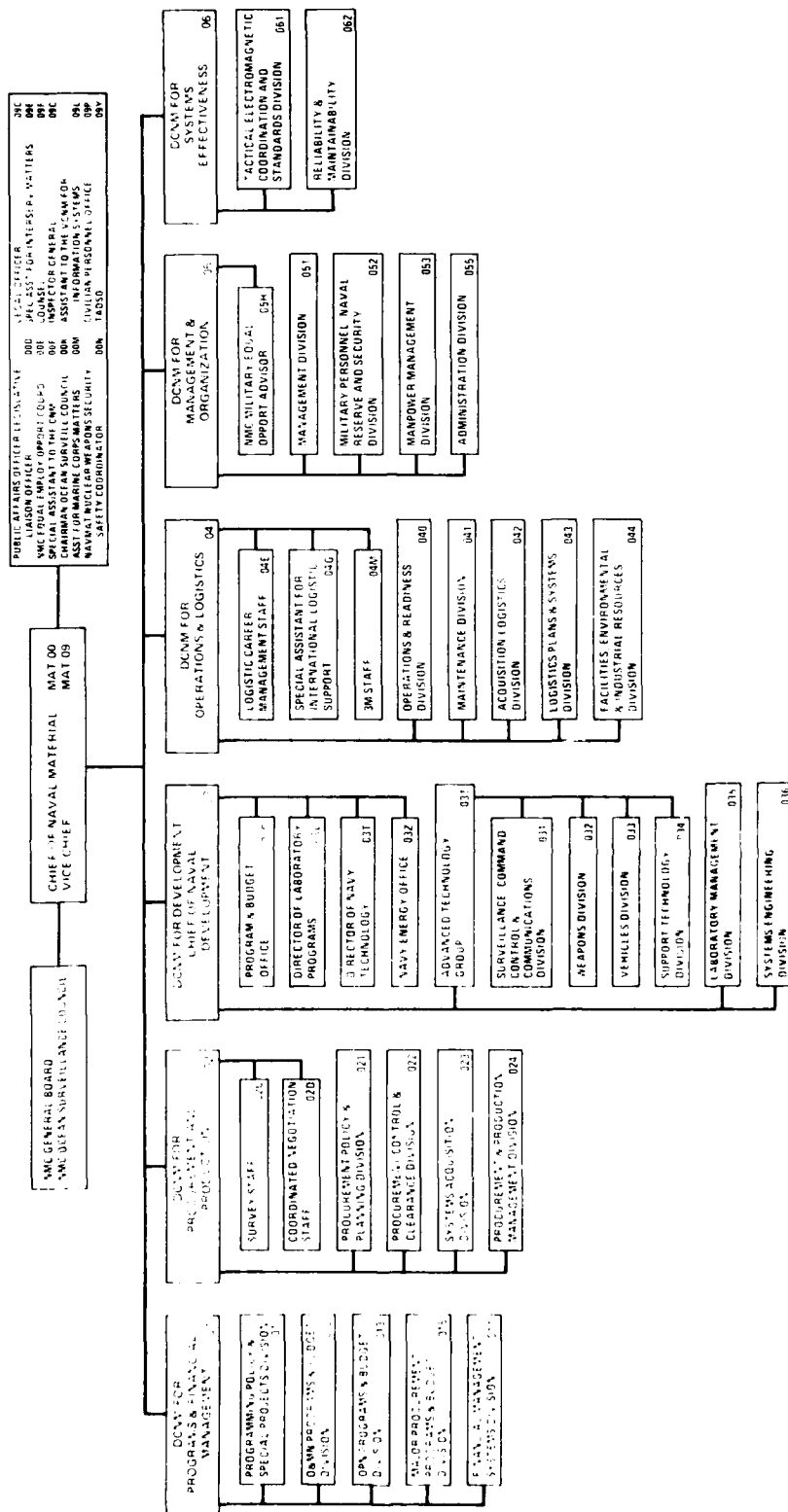
(Same as basic instructions).

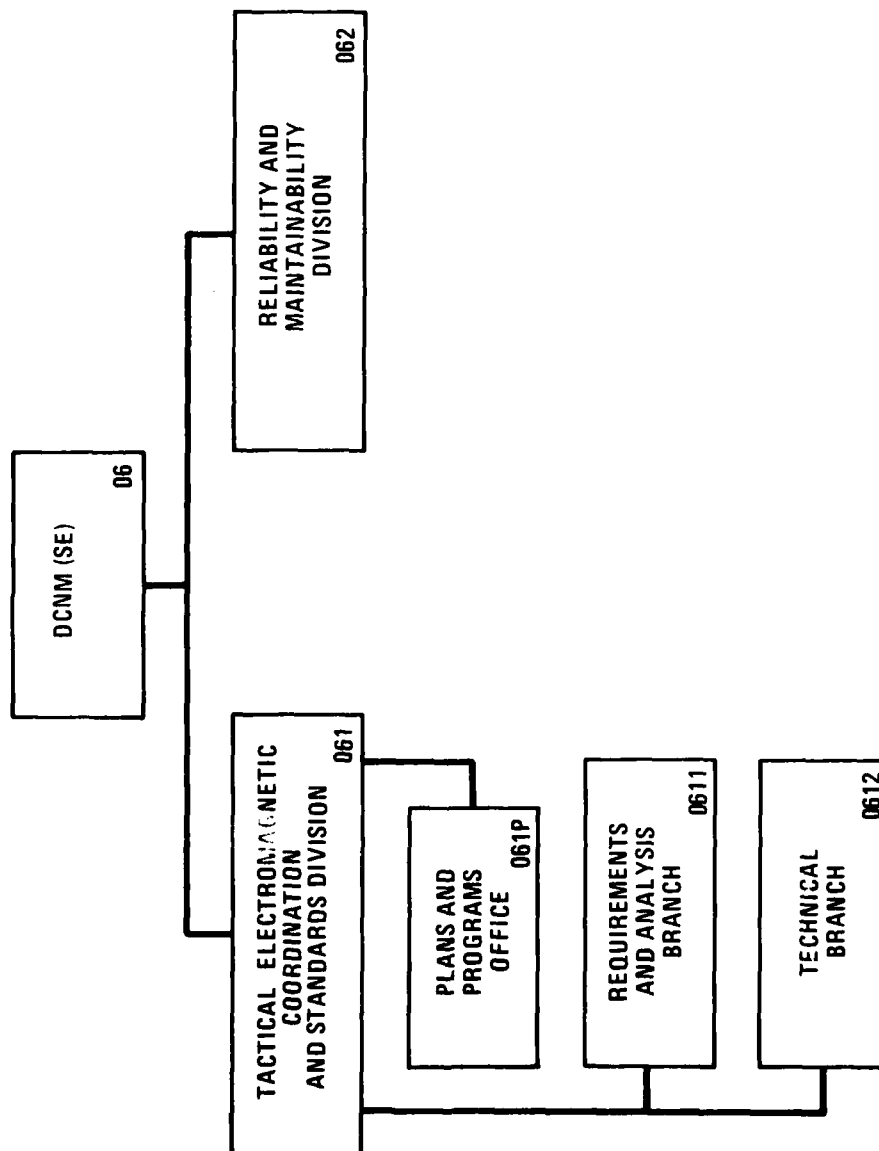
APPENDIX (C)
to ENCLOSURE (2)

NAVMATINST 5430.33D CH

<u>CODE</u>		<u>PAGE</u>
MAT 001	Manpower Management Division	III-05-07
MAT 005	Administrative Division	III-05-11
MAT 06	DEPUTY CHIEF OF NAVAL MATERIAL (SYSTEMS EFFECTIVENESS)	III-06-1
MAT 061	Tactical Electromagnetic Coordination and Standards Division	
MAT 062	Reliability and Maintainability Division	

HEADQUARTERS NAVAL MATERIAL COMMAND





DEPUTY CHIEF OF NAVAL MATERIAL FOR SYSTEMS EFFECTIVENESS
MAT 06

DEPUTY CHIEF OF NAVAL MATERIAL
SYSTEMS EFFECTIVENESS (MAT 06)

MISSION

Provides staff assistance to the Chief of Naval Material in: the assessment of effectiveness of integration and coordination in and among systems and equipment, and among systems, equipment and platforms in tactical electromagnetic areas of implication and in reliability and maintainability; ensures the adequacy of planning in his areas of cognizance; and advises the Chief of Naval Material in these areas.

RELATIONSHIPS

Formulates NMC policies in assigned areas and participates in HQ NAVMAT staff actions with policy implications in these areas. Advises and assists other NAVMAT Deputies, System Commanders and Project Managers in tactical electromagnetic efforts and reliability and maintainability matters. Reviews and comments on programming and budgetary submissions for adequacy and appropriateness in relation to tactical electromagnetic and reliability and maintainability efforts.

Provides coordination necessary for the integration of tactical electromagnetic efforts among the SYSCOMS and Project Managers.

TACTICAL ELECTROMAGNETIC COORDINATION AND STANDARDS DIVISION MAT 061

SUMMARY OF ORGANIZATION

Plans and Programs Office	MAT 061S
Requirements and Analysis Branch	MAT 0611
Technical Branch	MAT 0612

RESPONSIBILITIES

Provides staff support to the Chief of Naval Material (via the Deputy Chief of Naval Material for Systems Effectiveness) in the planning, coordination, assessment and integration of the NMC Tactical Electromagnetic Coordination and Standards (TECS) program in order to provide the operating forces with balanced, compatible effective, and countermeasure resistant electronics systems and equipment in an operating environment. These responsibilities include:

- a. Coordinating designated Tactical Electromagnetic efforts, and interfacing with OPNAV, SYSCOMS and other agencies and organizations as required.
- b. Establishing objectives, developing policy, recommending priorities and overall planning and programming for TECS.
- c. Acting as central point of contact within the NAVMATCOM for TECS.
- d. Coordinating the preparation, promulgation, and maintenance of a Navy-wide tactical EM plan.
- e. Implementing DOD and CNQ policy directives as applied to Task Force Electromagnetic Compatibility (EMC).
- f. Promulgating performance standards for the purpose of evaluating the compatibility and effectiveness of designated Tactical Electromagnetic systems when integrated into a total Task Force system.
- g. Publishing criteria for integration of Tactical Electromagnetic systems in Task Force platforms.
- h. Evaluates, appraises and makes recommendations to SYSCOMS, CNM and CNO regarding costs, schedules, capability (related to requirements), priorities and overall balance of tactical electromagnetic efforts.
- i. Reviews planning and programming of resources of designated Tactical Electromagnetic efforts in the NMC for Task Force combat and support systems.

j. Ensures that all designated tactical electromagnetic equipment and systems conform to approved policy and requirements by advising OPNAV on the material implications resulting from policy or doctrine changes.

k. Supports current SYSCOM and PM work efforts, or initiate new work efforts through the appropriate NMC functional organization to assure a material program for equipment to monitor tactical electromagnetic readiness of operating forces.

l. Compiles and maintains library of OPNAV and NAVMAT approved Policy, Doctrine, and Directives concerning Tactical Electromagnetic efforts, EM systems and equipment.

m. Coordinates with the Chief of Naval Development and Director of Navy Laboratories for programming of Exploratory Development funds that impact upon the capability to analyze, monitor, measure or evaluate electromagnetic performance.

n. Ensures that effectiveness analyses for candidate systems configurations are conducted during conceptual design phases of ship design and overhaul improvement programs.

o. Exercises management and control of funds other than those assigned to SYSCOM Commanders allocated for equipment and software efforts intended for analysis, monitoring, measuring or evaluating tactical electromagnetic performance of equipments, systems and platforms.

p. Serves as member of Electromagnetic Compatibility (EMC) boards and committees.

q. Conducts Fleet liaison in matters concerning technical and material aspects of electromagnetic systems and equipment.

RELIABILITY AND MAINTAINABILITY DIVISION

MAT 062

(R)

Serves as the NMC focal point for Reliability and Maintainability (R&M) matters and acts for the Chief of Naval Material to ensure the adequacy of R&M planning, direction, integration and evaluation of R&M in all programs in design development, production, test and operational phases. These responsibilities include:

- a. Initiating necessary plans and directives to fully implement an effective NMC R&M program.
- b. Assuring that adequate and realistic R&M programs and requirements are included in all applicable planning and acquisition documents (DCP's, APP's, RFP's, TDP's, etc.).
- c. Monitoring SYSCOM and PM weapons system R&M reviews; and in coordination with Program or Acquisition Managers initiating R&M reviews of various programs on an ad hoc basis.
- d. Maintaining continuous liaison with Fleet activities and Type Commanders to ensure that proper attention is given to current Fleet R&M problems, and that such problems are not being repeated in systems under development.
- e. Providing recommendations to the CNM for reorientation or termination of programs in which R&M achievements are unsatisfactory.
- f. In coordination with the DCNM(D), providing technical direction to the R&M Initiative Program established by the ASN (R&D) for the promotion of reliability growth of systems in development and to the correction of Fleet R&M problems.
- g. Establishing management reporting and control systems and procedures to insure the continuous and effective implementation of reliability and maintainability directives and instructions, and to track the reliability and maintainability status of procurements in order to identify the major problems requiring top management attention.
- h. Reviewing procurements on an ad hoc basis to evaluate the adequacy and effectiveness of achieving specified reliability and maintainability requirements.
- i. Developing education and training programs tailored to each organizational level and function which influences or is in a position to influence the achievement of NAVMAT reliability and maintainability requirements in procurements.

NAVMATINST 5430.33D CH

j. Inviting contractor consultation aimed at improving two-way communications and mutual understanding across the full spectrum of reliability and maintainability, to the ultimate betterment of both Navy reliability and maintainability procurement policies and industry response to those policies.

k. Monitoring contractor support provided in the reliability and maintainability function to various projects and offices throughout the Naval Material Command, to insure full compliance to NAVMAT reliability and maintainability requirements in the conduct of their business with the Navy.

NAVELEX INSTRUCTION 5430.1A CHANGE TRANSMITTAL

From: Commander, Naval Electronic Systems Command

Subj: Naval Electronic Systems Command Organization Manual

Ref: (a) NAVMATINST 5430.____, Tactical Electromagnetic Coordination and Standards

Encl: (1) Revised pages iv, 00-1, I-3, II-2 and II-4

1. Purpose. To change the basic instruction to reflect tactical electromagnetic coordination and standards efforts guidance as set forth in reference (a).
2. Remove pages of the basic numbered correspondingly to those of enclosure (1), and replace with enclosure (1). Delete pages 09-19, 09-20, 09-21, 09-22, 09-23 and 09-24.

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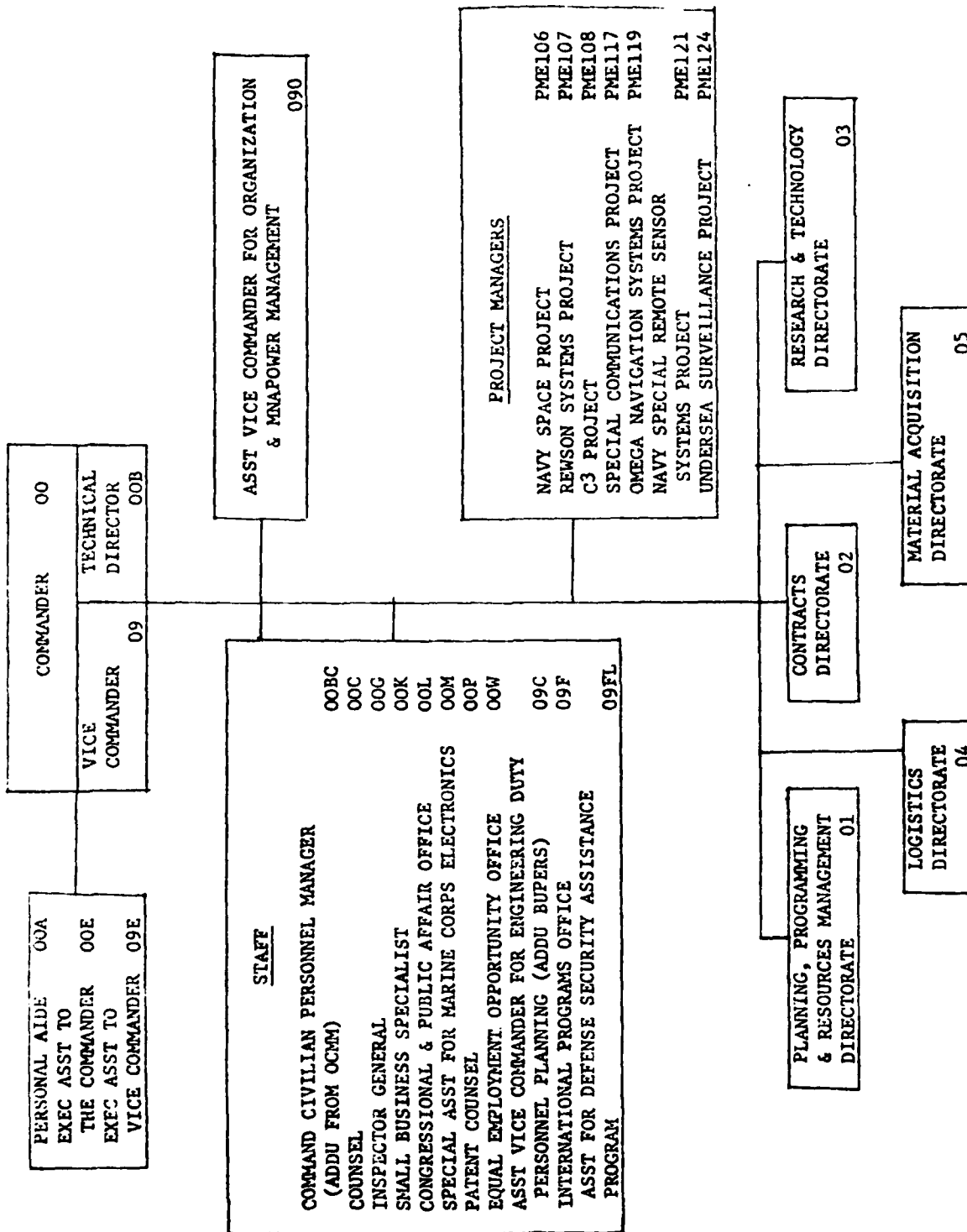
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APPENDIX D to
ENCLOSURE (2)

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	ELEX 090 Assistant Vice Commander for Organization & Manpower Management	09-3
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	PME117, SPECIAL COMMUNICATIONS PROJECT (SPECOM)	PME117-1
	PME119, OMEGA NAVIGATION SYSTEM PROJECT	PME119-1
	PME121, NAVY SPECIAL REMOTE SENSOR SYSTEMS PROJECT	PME121-1
	PME124, UNDERSEAS SURVEILLANCE PROJECT	PME124-1



D

c. Develops and manages a program (TEMPEST) for measurement and control of unintentional compromising electromagnetic emissions from naval units, and provides executive direction and guidance in these matters to the extent delegated or specified by the Chief of Naval Material.

d. Provides operational control and administrative support of the Naval Material Command intelligence program.

f. Provides system integration and coordination authority over Naval Material Command efforts with respect to Navy space components and systems.

g. Provides system integration and coordination authority over Naval Material Command efforts with respect to reconnaissance, electronic warfare, special operations, and naval intelligence systems (REWSON).

h. Provides centralized coordination of the naval telemetry program within the Naval Material Command.

i. Acts as the Department of the Navy Manager for PTTI (precise time and time interval), including distribution and dissemination thereof.

NAVELEX RDT&E program; ELEX 04, Logistics Directorate, provides life cycle support for NAVELEX systems/equipments and ELEX 05, Material Acquisition Directorate, provides program and technical management for the acquisition of electronic systems/equipments.

NAVELEX has several designated Project Managers, PMEs, responsible for managing the acquisition of one or more designated major systems. Designation is governed by a requirement for intensified management based on dollar value, national urgency, and/or recommendation by higher authority. Each PME reports directly to COMNAVELEX, and each operates with authority and responsibilities specified by an approved charter. The following Project Managers are now operating in NAVELEX: PME 106, Navy Space Project; PME 107, REWSON Systems Project; PME 108, Command, Control and Communications (C³) Project; PME 117, Special Communications Project; PME 119, Omega Navigation Systems Project; PME 121, Naval Special Remote Sensor Systems Project; and PME 124, Underseas Surveillance Project.

In addition, COMNAVELEX provides administrative support for the Tactical Electromagnetic Coordination and Standards Office. This group is the focus within NAVMAT for matters under its charter purview, and has a primary responsibility to the CNM, as MAT 063. (R)

COMNAVELEX has several staff offices which provide normal staff support in special areas of expertise, of which one, ELEX 090, is a major staff office for organization and manpower management. The duties of each staff office are specified elsewhere in the manual.

III. The Field Activity Organization

The NAVELEX Field Activity organization consists of eight Systems Engineering Centers (NAVELEXSYSENGCEN), and specialized activities such as the Navy Space Systems Activity (NSSA), the Navy Space Project Activity (NSPA), the NAVELEX Systems Security Engineering Center (NAVELEXSYSSECENGCECEN) and the Naval Electronic Test and Evaluation Detachment (NESTED), a major detachment of NAVELEXSYSENGCEN Portsmouth. NAVELEXSYSENGCENS provide electronics support to a wide range of shore activities and fleet elements in their local areas, and are sufficiently flexible to provide support to another area if required. In addition to the responsibilities for generalized electronics services in the local areas, these centers receive "specialist" assignments which may cover a wider geographic area. For example, the centers at Philadelphia and Vellejo have been given specialist assignments for air navigation aids systems East and West of the Mississippi, respectively.

To assure that the prime SYSCOM job as "material support" is properly (R) provided, ELEX 090 acts for the Command regarding all command (Head-quarters and Field) administrative management matters including such functional areas as manpower management, organization, personnel services (military and civilian) and security.

V. Headquarters - Field Relationships

ELEX 01, as the NAVELEX General Manager, is responsible for the development of field activity policy and plans, and ensures that adequate procedures are established for the programming, budgeting, control and allocation of field activity resources. In addition, the General Manager coordinates field activity efforts, evaluates field activity performance and generally ensures optimum utilization of field activity resources.

PME's, ELEX 03, 04 and 05 task the field; appraise field activity performance of specific tasks; establish priority lists of functions/projects to be performed by field activities; recommend transfer of resources from one field activity to another to ensure that the highest priority needs are satisfied, and provide advance planning data so that planning, programming, and budget action can be taken to obtain needed resources.

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